



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/784,235

02/24/2004

Jerome Bayle

612.43484X00

1580

20457 7590 11/10/2009
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

MERKLING, MATTHEW J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,235	Applicant(s) BAYLE ET AL.	
	Examiner MATTHEW J. MERKLING	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 20-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 20-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 claims a zone Z4 for separating the effluent from zone Z3 into an essentially gaseous phase, and an essentially solid phase (as such, the essentially solid phase comes from Z4). Then, in claim 27, Applicant claims that "the essentially solid phase" goes directly from zone Z3 into Z5. In other words, it is unclear what is meant by "the essentially solid phase"... In claim 1, "the essentially solid phase" comes from Z4, and in claim 27, the "essentially solid phase" comes from zone Z3.

For purposes of this examination, this will be interpreted as reading "further comprising a line directly connecting said zone Z3 to said zone Z5 for transferring a second essentially solid phase coming from zone Z3 to zone Z5.

Claim Objections

3. Claim 27 is objected to because of the following informalities: In the final line of claim 27, it appears the phrase "to zone" was inadvertently duplicated.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7-9, 20, 21 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Sass (US 4,322,222).

Regarding claim 1, Sass discloses a facility for producing synthesis gas from a solid feedstock including organic matter (see abstract), said facility including means for circulating a heat-carrying solid providing at least some of the heat necessary for such production (see abstract), a zone Z1 (22) including pyrolysis and gasification means (see Fig. 1 where 22 is a pyrolysis/gasification reactor), a zone Z2 (27) including separation means (cyclone separator), a line for supplying gaseous and solid effluents from zone Z1 to zone Z2 (line 25), a zone Z3 (38) including gasification means (see Fig. 1 where 38 is a pyrolysis/gasification reactor), a zone Z4 (50) including separation means (cyclone separator, see Fig. 1), and a zone Z5 (68) including combustion means (furnace), characterized in that zone Z1 has means for pyrolysis and gasification of said feedstock in a transported fluidized bed (see Fig. 1 where 22 is a pyrolysis/gasification reactor, col. 2 lines 2-9), in that zone Z2 has means for at least partial separation of the effluents from zone Z1 (cyclone separator) into an essentially gaseous phase (line 28) and into an essentially solid phase (line 34), in that zone Z3 is supplied at least in part with said

essentially solid phase (see Fig. 1 where solids in line 34 are introduced into reactor 38) and includes dense fluidized bed gasification means for gasification of said essentially solid phase (see Fig. 1 where 38 is a pyrolysis/gasification reactor, col. 2 lines 13-24), in that zone Z4 includes means for separating the effluents coming from zone Z3 (50 is a cyclone separator, see Fig. 1) into an essentially gaseous phase (line 54) and into an essentially solid phase (line 52), and in that zone Z5 (68) includes means for combusting the essentially solid phase coming from zone Z3 (68 is a furnace, see Fig. 1) and means for transferring the heat-carrying solid coming from said combustion into zone Z1 (via conduit 76 and 24).

Regarding claim 2, Sass further discloses zone Z5 has means for combusting the essentially solid phase coming from zone Z4 (Z5/68 is a furnace).

Regarding claims 3 and 20, Sass further discloses said pyrolysis/gasification zone Z1 includes means for supplying a reactive carrier gas (via conduit 20 and 21), means for introducing said feedstock (conduit 20), and means for injecting the heat-carrying solid (conduit 24, see Fig. 1).

Regarding claims 4 and 21, Sass further discloses said combustion zone Z5 has means for introducing an oxidizing gas (conduit 66) and means for transferring the heat-carrying solid coming from said combustion, to zone Z1 (via conduits 76 and 24).

Regarding claims 7 and 24, Sass further discloses zone Z3 includes reactive carrier gas supply means (conduit 47).

Regarding claims 8 and 25, Sass further discloses zone Z3 includes means for introducing the feedstock (conduit 36).

Regarding claims 9 and 26, Sass further discloses said zone Z5 includes means for supplying an additional fuel (depending on what is injected through conduit 66).

Regarding limitations recited in claims 1 and 9, which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states “Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sass (US 4,322,222) as applied to claims 1 and 2 above and further in view of Reh et al. (US 4,347,064).

Regarding claim 5, Sass discloses Z2 and Z4 as cyclone separators, but does not explicitly disclose adding the gaseous phase from Z2 to Z4. In other words, Sass does not disclose sending the gaseous phase from pyrolysis reactor 22 through two cyclone separators.

Reh also discloses a means to convert a carbonaceous solid into a valuable gas via pyrolysis/gasification (see abstract).

Reh teaches the gaseous effluent from a pyrolysis reactor (5) is sent through two cyclone separators (8 and 11) in order to provide a more thorough separation of the solid and the gases (col. 4 lines 31-44).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to send the gaseous stream of Sass from Z2 (27) to Z4 (50) (as taught by Reh) in order to further remove the solids that are entrained in the product leaving the gasification/pyrolysis reactor Z1.

9. Claims 6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sass (US 4,322,222) as applied to claims 1 and 2 above.

Regarding claims 6 and 23, Sass further discloses said zone Z5 includes:

- a first zone Z5 (68) including transported fluidized bed combustion means for combusting part of the essentially solid phase coming from zone Z3 and/or Z4 (68 is a furnace see Fig. 1),

- a zone Z6 (72) for separating the gaseous phase and the essentially solid phase coming from said combustion, and means for transferring the heat-carrying solid coming from said combustion, to zone Z1 (via conduits 76 and 24).

Sass, however, does not disclose a second dense fluidized bed combustion means (zone Z7) which combusts the solid phase coming from said combustion zone Z5.

However, such a modification is nothing more than a duplication of parts/process steps. Treating the solids from separator 72 in a second combustion zone would be a duplicate process step as taking the solids from separator Z4 and combusting them in Z5. Providing a duplicate combustion zone (Z7) would amount to a mere duplication of parts. It has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sass (US 4,322,222) as applied to claim 1 above and further in view of Wesselhoft et al. (US 3,998,607).

Regarding claim 27, Sass, as modified above, teaches separating solids from the effluent of zone Z3 (in separator Z4, as discussed above) and subsequently sending the solids to a combustor (Z5 in order to generate the heat needed for the pyrolysis/gasification reaction). However, Sass does not explicitly disclose a line directly

connecting said zone Z3 to said zone Z5 for transferring a second essentially solid phase coming from zone Z3 to zone to zone Z5.

Wesselhoft also discloses an apparatus which gasifies/pyrolyzes a carbonaceous medium (see abstract).

Wesselhoft teaches pyrolyzing/gasifying an organic material (coal, see Fig. 1) in a gasification zone (such as zone 15), sending solids from the gasification zone (15) directly (via conduit 31) to a combustion zone (33) while also sending a second solids stream (separated from the gasification zone effluent in cyclone 22) to the combustion zone (33) for combusting (see conduit 25). Wesselhoft teaches such a configuration in order to recycle material that has been heated in the combustion zone by combustion of solid material fed from the gasification zone, and then recycling the heated material back into the gasification zone (via conduit 44) to provide heat for the gasification reaction. Such a configuration is preferable for purposes of effecting a preliminary separation between high ash and high carbon content and therefore can be used to fuel the combustion zone with a higher carbon content material (which is inherently withdrawn with the larger particles in the line that goes directly between the gasifier 15 and the combustor 33). See col. 6 lines 25-48.

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add a line directly between zone Z3 and Z5 of Sass (as taught by Wesselhoft) in order to feed a larger particle size to the combustor and therefore generate more heat than would be generated from the smaller particle sized solid particles that are removed from gaseous effluent of the gasifier in cyclone separator (50 of Wesselhoft).

Response to Arguments

11. Applicant's arguments filed 7/2/09 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

On pages 8 and 9, Applicant argues that Sass does not teach means for a transported fluidized bed or a dense fluidized bed. The examiner respectfully disagrees with such an argument. The examiner notes that the features which Applicant claims are not taught by Sass (the gas flow rate and the sink rate of the solids) are directed toward a method of operating the claimed apparatus and do not distinguish the apparatus over the prior art. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. MERKLING whose telephone number is (571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./
Examiner, Art Unit 1795

/Jennifer K. Michener/
Supervisory Patent Examiner, Art Unit 1795